QuickSpecs

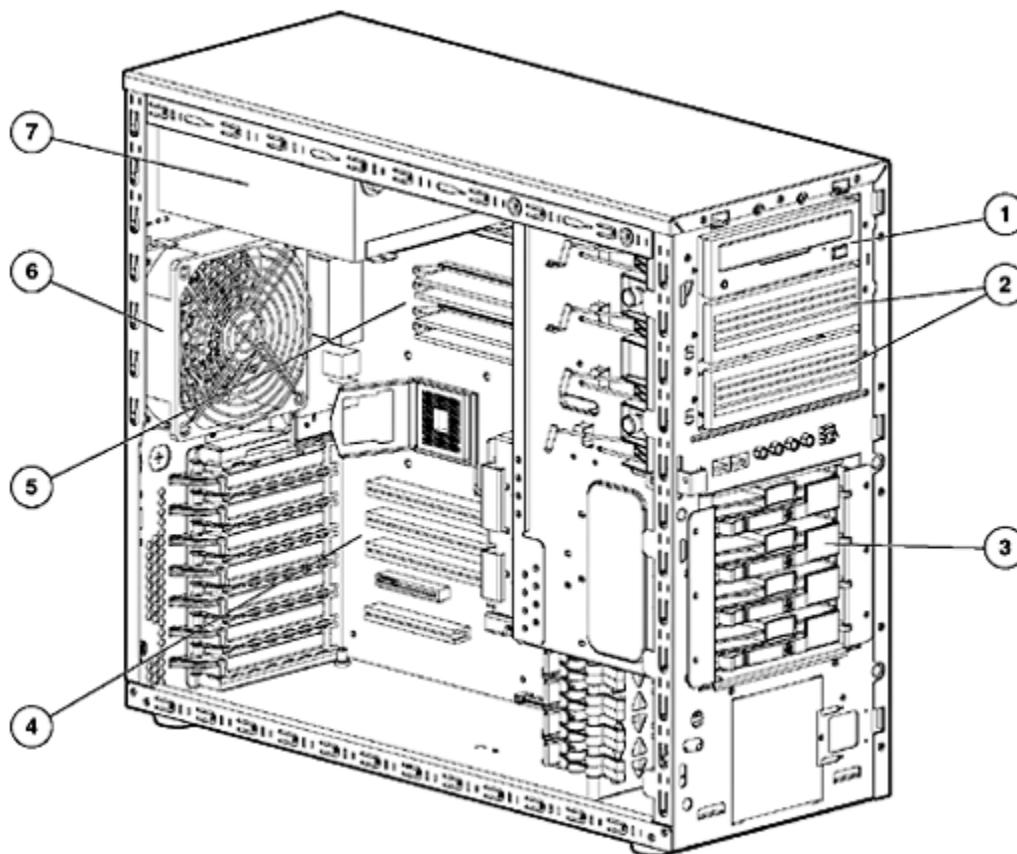*Overview*

1. 48x IDE (ATAPI) CD-ROM
2. Removable Media Bays
3. Four Hot-Plug (shown) or Four Non hot-plug (not shown) Drive Bays
4. Four Expansion Slots (Two PCI-X, One PCI, and One PCI Express)

5. Four DIMM Sockets, for up to 4GB DDR memory
6. System Fan
7. 350W Power Supply

At A Glance

- Supports a single 3.0 GHz, 3.20 GHz, or 3.40 GHz Intel® Pentium® 4 processor with 1MB or 2MB cache size or a single 2.8 GHz Intel Celeron processor with 256KB cache size.
- Intel® Pentium® 4 processors include support for Hyper-Threading
- Intel E7221 Chipset supporting 800MHz FSB (with Pentium 4 processor) or 533MHz FSB (with Celeron processor)
- PC3200 400MHz DDR SDRAM with advanced unbuffered ECC capabilities and optional interleaving (expandable up to 4 GB)
- Embedded NC7761 PCI 10/100/1000T Gigabit network adapter
- Four Expansion Slots: Two PCI-X 64-bit/100MHz, One PCI 32-bit/33MHz slot, One PCI Express slot (X8 connector, x4 speed)
- SCSI models include
  - Single Channel Ultra320 SCSI Adapter in PCI-X slot
- SATA models include
  - Integrated four Channel SATA Controller
- Four USB 2.0 ports - Two on front, two on rear
- ROM Based Setup Utility (RBSU) and PXE support
- Protected by HP Services including a one-year, Next Business Day limited global warranty - Certain restrictions and exclusions apply.

Standard Features

Processor One of the following	Intel Pentium 4 - 3.4 GHz/800-2MB L2 **NOTE:** See "Configuration Information - Factory Integrated Models" section Intel Pentium 4 - 3.2 GHz/800-2MB L2 Intel Pentium 4 - 3.4 GHz/800-1MB L2 Intel Pentium 4 - 3.2 GHz/800-1MB L2 Intel Pentium 4 - 3.0 GHz/800-1MB L2 **NOTE:** See "Configuration Information - Factory Integrated Models" section Intel Celeron 2.8 GHz/533-256KB L2 **NOTE:** See "Configuration Information - Factory Integrated Models" section
Cache Memory One of the following depending on Model	Integrated 1MB level 2 ECC cache (Pentium 4 models) Integrated 2MB level 2 ECC cache (Pentium 4 models) Integrated 256KB level 2 ECC cache (Celeron models)
Memory Protection	Advanced ECC

Memory

Type	PC3200 DDR SDRAM (400MHz)
Standard	512 MB (1 x 512 MB)
Maximum	4 GB

Network Controller   Embedded NC7761 PCI 10/100/1000T Gigabit network adapter

Expansion Slots

Slot Number	Bus Speed	Maximum Card Length	Hot Plug	PCI Voltage
1	64-bit/100MHz PCI-X	12.3	No	3.3V
2	64-bit/100MHz PCI-X	12.3	No	3.3V
3	PCI Express x4 (x8 connector)	12.3	No	N/A
4	32-bit/33MHz PCI	12.3	No	3.3V

Storage Controllers

Single Channel Ultra320 SCSI Adapter (SCSI Models) OR

Integrated four port SATA controller with integrated SATA RAID 0, 1 (SATA Models)
NOTE: Integrated SATA RAID functionality supports 2 hard drives.

NOTE: See the "Storage" section of these QuickSpecs for information on controllers and cables required to support SATA drive configurations

Storage

Diskette Drive	Optional 1.44 MB Diskette Drive	
Optical Drive	48x IDE (ATAPI) CD-ROM Drive	

Standard Features

Maximum Internal Storage			
	Hot Plug SCSI	1.2TB	4 x 300GB Ultra320
	Non-Hot Plug SCSI	587GB	4 x 146GB Ultra320
	Hot Plug SAS (3.5")	587GB	4 x 146GB SAS
	Hot Plug SATA (3.5")	2.0TB	4 x 500GB SATA
	Non-Hot Plug SATA	320GB	4 x 80GB SATA

NOTE: See the "Storage" section of these QuickSpecs for information on controllers and cables required to support SATA and SAS drive configurations

Interfaces		
	Parallel	1
	Serial	1
	Pointing Device (Mouse)	1
	Graphics	1
	Keyboard	1
	USB	4 (2 front, 2 rear)

NOTE: Please see the following URL for additional information regarding USB support: http://h18004.www1.hp.com/products/servers/platforms/usb-support.html

	Dedicated USB	1 (available for USB tape connectivity)
	Network RJ-45 (Ethernet)	1

Graphics	
	Integrated ATI RAGE XL Video Controller with 8MB SDRAM Video Memory

Form Factor	
	Tower (5U) (Tower to Rack Enabling Option Kit (PN 238547-B22) available)

ProLiant Essentials Foundation Pack Software

HP Systems Insight Manager

HP's new HP Systems Insight Manager (HP SIM) helps maximize system uptime and performance and reduce system maintenance costs by providing proactive notification of problems before those problems result in unplanned downtime or reduced productivity. HP SIM are both easy to set up work with the Insight Management Agents, integrated Lights-Out and Remote Insight Lights-Out Edition, and Version Control Agents to deliver robust fault, configuration, and asset management as well as remote administration. With HP SIM customers will also be able to take advantage of role-based security; the ability to manage ProLiant, Integrity, and HP 9000 systems; and plug-ins for storage, client, printer, and power management as well as server rapid deployment, performance management, and workload management. For more details on HP SIM visit http://www.hp.com/go/hpsim.

Management Agents

The Management Agents form the foundation for HP's Intelligent Manageability strategy. They provide direct, browser-based access to in-depth instrumentation built into HP servers, workstations, desktops, and portables, and send alerts to HP Systems Insight Manager and other enterprise management applications in case of subsystem or environmental failures. For additional information about the Management Agents and other management products from HP, please visit the management Web site at http://www.hp.com/servers/manage.

Standard Features

	SmartStart	SmartStart is a tool that simplifies server setup, providing a rapid way to deploy reliable and consistent server configurations. For more information, please visit the SmartStart Web site at http://www.hp.com/servers/manage. SmartStart version supported (minimum): SmartStart 7.20.
	Subscriber's Choice	Subscriber's Choice Driver and Support Alerts/Notifications is a web-based email subscription service that provides automatic delivery of software and driver change notifications for ProLiant products. Sign up at http://www.hp.com/go/subscriberschoice and customize your profile to receive various new alerts as they become available, on a weekly or monthly basis.
	ROMPaq, support software, and configuration utilities	The latest software, drivers, and firmware fully optimized and tested for your ProLiant server and options available in SmartStart or downloadable from Software and Drivers download pages, linked from the SmartStart website at http://www.hp.com/servers/smartstart.
	Survey Utility and diagnostics utilities	The most advanced configuration analysis, reporting and troubleshooting utilities used by HP and at your fingertips, available in SmartStart.
	Optional ProLiant Essentials Value Packs	Optional software offerings that selectively extend the functionality of an Adaptive Infrastructure to address specific business problems and needs:

- Rapid Deployment Pack - an automated solution for multi-server deployment and provisioning, enabling companies to quickly and easily adapt to changing business demands.
- Workload Management Pack - provides easier management of complex environments, improving overall server utilization and enabling Microsoft® Windows® 2000 customers for the first time to confidently deploy multiple applications on a single multiprocessor ProLiant Server.
- Performance Management Pack - a performance management solution that identifies and explains hardware performance bottlenecks on ProLiant servers and attached options enabling users to better utilize their valuable resources.
- Intelligent Networking Pack - detects and analyzes network bottlenecks or broken network linkages and steers traffic to the optimum route based on network conditions, plus it provides an extra layer of protection. The virus throttle feature of the solution slows the propagation of fast spreading virus
- Vulnerability and Patch Management Pack - identifies and remediates software security vulnerabilities due to missing patches as well operating system configurations that can be exploited by viruses, worms, and other blended threats
- Virtual Machine Management Pack - provides central management and control of virtual machines from Microsoft and VMware. Integrated approach provides the ability to manage both physical and virtual resources from a single management console.
- Server Migration Pack - The Server Migration Pack automates the manual processes required for migrating servers between physical or virtual platforms (P2V, V2P, and V2V).

NOTE: Flexible and volume quantity license kits are available for ProLiant Essentials Value Packs. Refer to http://www.hp.com/servers/proliantessentials or the various ProLiant

Standard Features

Essentials Value Pack product QuickSpecs for more information.

NOTE: For more information regarding ProLiant Essentials Software, please see the following URL: http://www.hp.com/servers/proliantessentials.

Industry Standard Compliance	ACPI V1.0b Compliant PCI 2.2 Compliant PCI-X 1.0 Compliant PCI-Express 1.0a Compliant PXE Support WOL Support Microsoft Logo certifications Novell Logo certifications USB2.0
Manageability	HP Systems Insight Manager Online ROM Flash Utility Automatic Server Recovery-2 (ASR-2) Drive Parameter Tracking (with Smart Array Controller) Dynamic Sector Repairing (with Smart Array Controller) Pre-Failure Warranty (covers processors, memory and SCSI hard drives) BIOS Serial Console
Security	Power-on password Setup password Diskette boot control Power switch security Intruder Alert Message
Server Power Cords	All models ship with one 6' standard low-line country specific power cord.
UPS and PDU Power Cord Matrix	Please see the UPS and PDU cable matrix that lists cable descriptions, requirements, and specifications for UPS and PDU units: ftp://ftp.compaq.com/pub/products/servers/ProLiantstorage/power-protection/powercordmatrix.pdf.
Power Specifications	To review typical system power ratings use the Active Answers Power Calculator which is available via the online tool located at URL: http://h30099.www3.hp.com/configurator/powercalcs.asp
Power Supply	350 Watts, PFC (Power Factor Correcting)
System Fans	1 - Non-hot plug, Non-redundant system fan **NOTE:** Does not include fans in CPU heatsink or power supply.
Required Cabling	For required cabling information, refer to the Web site at http://h18000.www1.hp.com/products/servers/ProLiantML310/.

Standard Features

OS Support	Microsoft Windows Server 2003 (Standard & Web Edition) Microsoft Small Business Server 2003 Microsoft Windows 2000 Server Novell NetWare Linux (Red Hat, SuSE, and UnitedLinux) VMware Virtualization Software

NOTE: For a more complete and up-to-date listing of supported OSs and versions, please visit our OS Support Matrix at: http://www.hp.com/go/supportos

NOTE: For an up-to-date listing of the latest drivers available for the HP ProLiant ML310, please see: http://h18023.www1.hp.com/support/files/server/us/index.html.

NOTE: For a more complete and up-to-date information on Linux support, please visit HP Linux Web site at: http://h18000.www1.hp.com/products/servers/linux/hpLinuxcert.html

NOTE: For more complete and up-to-date information on how to buy server operating systems from HP please visit the OS product site at:
http://h18004.www1.hp.com/products/servers/software/OEM.html

NOTE: For more information on HP's Certified and Supported ProLiant Servers, please visit the VMware Server Support Matrix at:
http://h18004.www1.hp.com/products/servers/software/vmware/hpvmwarecert.html

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Rack Airflow Requirements

Rack 10000 series Cabinets
The increasing power of new high-performance processor technology requires increased cooling efficiency for rack-mounted servers. The 10000 Series Racks provide enhanced airflow for maximum cooling, allowing these racks to be fully loaded with servers using the latest processors.

CAUTION: If a third-party rack is used, observe the following additional requirements to ensure adequate airflow and to prevent damage to the equipment:

- Front and rear doors: If your 42U server rack includes closing front and rear doors, you must allow 830 square inches (5,350 sq cm) of hole evenly distributed from top to bottom to permit adequate airflow (equivalent to the required 64 percent open area for ventilation).
- Side: The clearance between the installed rack component and the side panels of the rack must be a minimum of 2.75 inches (7 cm).

CAUTION: Always use blanking panels to fill all remaining empty front panel U-spaces in the rack. This arrangement ensures proper airflow. Using a rack without blanking panels results in improper cooling that can lead to thermal damage.

NOTE: For additional information, refer to the Setup and Installation Guide or the Documentation CD provided with the server, or to the server documentation located in the Support section at the following URL: http://h18000.www1.hp.com/products/servers/ProLiantdl760/index.html.

Factory Express Portfolio for Servers and Storage

HP Factory Express offers configuration, customization, integration and deployment services for HP servers and storage products. Customers can choose how their factory solutions are built, tested, integrated, shipped and deployed.

Factory Express offers service packages for simple configuration, racking, installation, complex configuration and design services as well as individual factory services, such as image loading, asset tagging, and custom packaging. HP products supported through Factory Express include a wide array of servers and storage: HP Integrity, HP ProLiant, HP ProLiant Server Blades, HP BladeSystem, HP 9000 servers as well as the MSA1000, VA7xxx, EVA, XP, rackable tape libraries and configurable network switches.

For more information on Factory Express services for your specific server model please contact your sales representative or go to http://www.hp.com/go/factory-express.

Standard Features

Custom Builder	Please see the Enterprise Configurator for configuration assistance at: http://www.hp.com/products/configurator.

HP ProLiant Smart Buys (NA only)

The HP Smart Buy program offers mainstream business solutions at competitive prices with excellent availability and superior HP quality. It offers a wide range of industry-leading HP products at compelling prices, allowing you to receive richer configurations with additional options.

NOTE: ProLiant Smart Buys are available in NA only. For detailed specification information on ProLiant Smart Buys please click on the following link:
ftp://ftp.compaq.com/pub/products/servers/smartbuys.pdf

Service and Support

This product is covered by a global limited warranty and supported by HP Services and a worldwide network of resellers and service providers. Hardware diagnostic support and repair is available for three years from date of purchase. Support for software and initial setup is available for 90 days from date of purchase. Additional support may be covered under the warranty or available for an additional fee. Enhancements to warranty services are available through HP Care Pack services or customized service agreements.

NOTE: Limited warranty includes 1 year parts, 1 year labor, 1 year on-site support.

Care Pack services provide a range of life cycle support options that let you choose the service levels that meet your business requirements, from basic to mission-critical.

A full range of HP Care Pack hardware and software services are available including:

- Installation and start up
- Education courses
- Extended onsite hardware coverage hours from same business day 13 hours, 5 day to 24 hours, 7 days call window with options including 4-hour response or 6-hour Call To Repair
- Comprehensive range of software technical support for Microsoft, Linux, ProLiant Essentials and VMWare-based IT solutions helping to deliver high level of application availability. Response times range from 30 mins for critical problems to 2 hours.
- System Management, Performance Services and Mission Critical Support Solution

HP Care Pack services include coverage for the HP branded hardware options qualified for the server, purchased at the same time or afterward, internal to the enclosure, as well as 22" and smaller external monitors and tower UPS options up to 3kVA; these items will be covered at the same service level and for the same coverage period as the server. Coverage of UPS Battery is not included, standard warranty terms & conditions apply. For servers or storage systems installed within a rack, service also covers all HP qualified rack options installed within the same rack.

NOTE: For more information on HP Care Pack services, contact any of our worldwide sales offices or resellers or visit our worldwide Web site on the internet at:
http://www.hp.com/hps/carepack
NOTE: For more complete information on HP Services offerings, customers and resellers, please visit us at: http://www.hp.com/hps
NOTE: Additional information regarding worldwide limited warranty and technical support is available at: http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html

Models

ML310T02 3.4/800-1M HP-SCSI 376793-xx1		
	Processor(s)	(1) Intel Pentium 3.40 GHz (standard)
	Cache Memory	1MB Level 2 cache
	Memory	512 MB (Standard) to 4 GB (Maximum) of Advanced ECC PC3200 DDR SDRAM DIMM Memory
	Network Controller	Embedded NC7761 PCI 10/100/1000T Gigabit network adapter
	Storage Controller	Single Channel Ultra320 SCSI controller in PCI slot
	Hard Drives	None ship standard (up to 4 hot plug SCSI drives supported)
	Internal Storage	1.20 TB maximum hot plug SCSI (with optional hard drives)
	Optical Drive	48x IDE (ATAPI) CD-ROM Drive
	Diskette Drive	None ship standard (Optional 1.44 MB Diskette Drive)
	Form Factor	Tower (5U) (Tower to Rack Enabling Option Kit available)

ML310T02 3.4/800-1M HP-SATA/SAS 376794-xx1		
	Processor(s)	(1) Intel Pentium 3.40 GHz (standard)
	Cache Memory	1MB Level 2 cache
	Memory	512 MB (Standard) to 4 GB (Maximum) of Advanced ECC PC3200 DDR SDRAM DIMM Memory
	Network Controller	Embedded NC7761 PCI 10/100/1000T Gigabit network adapter
	Storage Controller	Four port Integrated SATA Controller
	Hard Drives	None ship standard (up to 4 hot plug SATA or SAS drives supported) **NOTE:** See the "Storage" section of these QuickSpecs for information on controllers and cables required to support SATA and SAS drive configurations
	Internal Storage	2.0 TB maximum hot plug SATA (with optional hard drives)
	Optical Drive	48x IDE (ATAPI) CD-ROM Drive
	Diskette Drive	None ship standard (Optional 1.44 MB Diskette Drive)
	Form Factor	Tower (5U) (Tower to Rack Enabling Option Kit available)

ML310T02 3.4/800-1M NHP-SCSI 378247-xx2		
	Processor(s)	(1) Intel Pentium 3.40 GHz (standard)
	Cache Memory	1MB Level 2 cache
	Memory	512 MB (Standard) to 4 GB (Maximum) of Advanced ECC PC3200 DDR SDRAM DIMM Memory
	Network Controller	Embedded NC7761 PCI 10/100/1000T Gigabit network adapter
	Storage Controller	Single Channel Ultra320 SCSI controller in PCI slot
	Hard Drives	(1) 36.4 GB Ultra320 SCSI
	Internal Storage	587.2 GB maximum NHP SCSI (with optional hard drives)
	Optical Drive	48x IDE (ATAPI) CD-ROM Drive
	Diskette Drive	None ship standard (Optional 1.44 MB Diskette Drive)
	Form Factor	Tower (5U) (Tower to Rack Enabling Option Kit available)

QuickSpecs

Models

ML310T02 3.4/800-1M
NHP SATA80
381833-xx2

Processor(s)	(1) Intel Pentium 3.40 GHz (standard)
Cache Memory	1MB Level 2 cache
Memory	512 MB (Standard) to 4 GB (Maximum) of Advanced ECC PC3200 DDR SDRAM DIMM Memory
Network Controller	Embedded NC7761 PCI 10/100/1000T Gigabit network adapter
Storage Controller	Four port Integrated SATA Controller
Hard Drives	(1) 80GB Non hot plug SATA drive
Internal Storage	320 GB maximum NHP SATA (with optional drives) **NOTE:** See the "Storage" section of these QuickSpecs for information on controllers and cables required to support SATA drive configurations
Optical Drive	48x IDE (ATAPI) CD-ROM Drive
Diskette Drive	None ship standard (Optional 1.44 MB Diskette Drive)
Form Factor	Tower (5U) (Tower to Rack Enabling Option Kit available)

ML310T02 3.2/800-2M
HP SCSI
381839-xx1

Processor(s)	(1) Intel Pentium 3.20 GHz (standard)
Cache Memory	2MB Level 2 cache
Memory	512 MB (Standard) to 4 GB (Maximum) of Advanced ECC PC3200 DDR SDRAM DIMM Memory
Network Controller	Embedded NC7761 PCI 10/100/1000T Gigabit network adapter
Storage Controller	Single Channel Ultra320 SCSI controller in PCI slot
Hard Drives	None ship standard (up to 4 hot plug SCSI drives supported)
Internal Storage	1.20 TB maximum hot plug SCSI (with optional hard drives)
Optical Drive	48x IDE (ATAPI) CD-ROM Drive
Diskette Drive	None ship standard (Optional 1.44 MB Diskette Drive)
Form Factor	Tower (5U) (Tower to Rack Enabling Option Kit available)

ML310T02 3.2/800-2M
HP SATA/SAS
381838-xx1

Processor(s)	(1) Intel Pentium 3.20 GHz (standard)
Cache Memory	2MB Level 2 cache
Memory	512 MB (Standard) to 4 GB (Maximum) of Advanced ECC PC3200 DDR SDRAM DIMM Memory
Network Controller	Embedded NC7761 PCI 10/100/1000T Gigabit network adapter
Storage Controller	Four port Integrated SATA Controller
Hard Drives	None ship standard (up to 4 hot plug SATA or SAS drives supported) **NOTE:** See the "Storage" section of these QuickSpecs for information on controllers and cables required to support SATA and SAS drive configurations
Internal Storage	2.0 TB maximum hot plug SATA (with optional hard drives)
Optical Drive	48x IDE (ATAPI) CD-ROM Drive
Diskette Drive	None ship standard (Optional 1.44 MB Diskette Drive)
Form Factor	Tower (5U) (Tower to Rack Enabling Option Kit available)

Models

ML310T02 3.2/800-1M HP-SCSI 376871-xx1		
	Processor(s)	(1) Intel Pentium 3.20 GHz (standard)
	Cache Memory	1MB Level 2 cache
	Memory	512 MB (Standard) to 4 GB (Maximum) of Advanced ECC PC3200 DDR SDRAM DIMM Memory
	Network Controller	Embedded NC7761 PCI 10/100/1000T Gigabit network adapter
	Storage Controller	Single Channel Ultra320 SCSI controller in PCI slot
	Hard Drives	None ship standard (up to 4 hot plug SCSI drives supported)
	Internal Storage	1.2 TB maximum hot plug SCSI (with optional hard drives)
	Optical Drive	48x IDE (ATAPI) CD-ROM Drive
	Diskette Drive	None ship standard (Optional 1.44 MB Diskette Drive)
	Form Factor	Tower (5U) (Tower to Rack Enabling Option Kit available)

ML310T02 3.2/800-1M HP-SATA/SAS 376852-xx1		
	Processor(s)	(1) Intel Pentium 3.20 GHz (standard)
	Cache Memory	1MB Level 2 cache
	Memory	512 MB (Standard) to 4 GB (Maximum) of Advanced ECC PC3200 DDR SDRAM DIMM Memory
	Network Controller	Embedded NC7761 PCI 10/100/1000T Gigabit network adapter
	Storage Controller	Four port Integrated SATA Controller
	Hard Drives	None ship standard (up to 4 hot plug SATA or SAS drives) **NOTE:** See the "Storage" section of these QuickSpecs for information on controllers and cables required to support SATA and SAS drive configurations
	Internal Storage	2.0 TB maximum hot plug SATA (with optional hard drives)
	Optical Drive	48x IDE (ATAPI) CD-ROM Drive
	Diskette Drive	None ship standard (Optional 1.44 MB Diskette Drive)
	Form Factor	Tower (5U) (Tower to Rack Enabling Option Kit available)

ML310T02 3.2/800-1M NHP SCSI 378279-xx2		
	Processor(s)	(1) Intel Pentium 3.20 GHz (standard)
	Cache Memory	1MB Level 2 cache
	Memory	512 MB (Standard) to 4 GB (Maximum) of Advanced ECC PC3200 DDR SDRAM DIMM Memory
	Network Controller	Embedded NC7761 PCI 10/100/1000T Gigabit network adapter
	Storage Controller	Single Channel Ultra320 SCSI controller in PCI slot
	Hard Drives	(1) 36.4 GB Ultra320 SCSI
	Internal Storage	320 GB maximum (with optional hard drives)
	Optical Drive	48x IDE (ATAPI) CD-ROM Drive
	Diskette Drive	None ship standard (Optional 1.44 MB Diskette Drive)
	Form Factor	Tower (5U) (Tower to Rack Enabling Option Kit available)

Models

ML310T02 3.2/800-1M NHP SATA80 381832-xx2	**Processor(s)**	(1) Intel Pentium 3.20 GHz (standard)
	Cache Memory	1MB Level 2 cache
	Memory	512 MB (Standard) to 4 GB (Maximum) of Advanced ECC PC3200 DDR SDRAM DIMM Memory
	Network Controller	Embedded NC7761 PCI 10/100/1000T Gigabit network adapter
	Storage Controller	Four port Integrated SATA Controller
	Hard Drives	(1) 80GB Non hot plug SATA drive
	Internal Storage	320 GB maximum non hot plug SATA (with optional hard drives) **NOTE:** See the "Storage" section of these QuickSpecs for information on controllers and cables required to support SATA drive configurations
	Optical Drive	48x IDE (ATAPI) CD-ROM Drive
	Diskette Drive	None ship standard (Optional 1.44 MB Diskette Drive)
	Form Factor	Tower (5U) (Tower to Rack Enabling Option Kit available)

Country Code Key	XX=00	NA
	XX=01	Australia
	XX=03	UK
	XX=04	Germany
	XX=05	France
	XX=20	Brazil
	XX=29	Japan
	XX=37	AP
	XX=42	EURO
	XX=AA	PRC
	XX=AB	Taiwan

Configuration Information - Factory Integrated Models (North America only)

NOTE: For Configure to Order requirements within EMEA region, please consult local Sales Contact.
NOTE: All configure-to-order servers must start with a CTO Chassis. Use the following section to order a server customized to your requirements with options integrated at the factory. The options you select in steps 2 and 3 will be integrated with the base configuration you select in step 1. Additional options selected in Step 4 will also be integrated when applicable.
NOTE: Standard models of this product offering (see previous section of this document) do not support HP Factory Express Server Configuration Level 1.

Step 1: Base Configuration

Models	HP ProLiant ML310 Tower CTO Chassis NHP SCSI (North America)	381850-405
	HP ProLiant ML310 Tower CTO Chassis NHP SATA (North America)	381851-405
	HP ProLiant ML310 Tower CTO Chassis HP-SCSI US (North America)	378559-405
	HP ProLiant ML310 Tower CTO Chassis HP-SATA/SAS (North America)	378560-405
	Factory Integrated Models ship with:	
	Embedded NC7761 PCI 10/100/1000T Gigabit network adapter	
	Integrated four Channel SATA Controller (included with 381851-405 and 378560-405 ONLY)	
	350 Watts, PFC (Power Factor Correcting)	
	Keyboard	
	Mouse	
	Tower 5U Form Factor	

Step 2: Choose Required Options (only one of the following from each list unless otherwise noted

Processors	Celeron Processor 2.80-GHz/533 MHz Front Side Bus, FIO	383872-L22
	Pentium Processor 3.00-GHz/800 MHz Front Side Bus, FIO	390813-L22
	Pentium Processor 3.20-GHz/ 800 MHz Front Side Bus, 1MB FIO	383871-L22
	Pentium Processor 3.20-GHz/ 800 MHz Front Side Bus, 2MB FIO	383870-L22
	Pentium Processor 3.40-GHz/ 800 MHz Front Side Bus, 1MB FIO	383869-L22
	Pentium Processor 3.40-GHz/ 800 MHz Front Side Bus, 2MB FIO	383868-L22
Base Memory	256 MB Advanced ECC PC3200 DDR SDRAM DIMM Kit (1 x 256 MB)	354557-B21
	512 MB Advanced ECC PC3200 DDR SDRAM DIMM Kit (1 x 512 MB)	354560-B21
	1024 MB Advanced ECC PC3200 DDR SDRAM DIMM Kit (1 x 1024 MB)	354563-B21
Optical Drive	CD-RW/DVD-ROM Combo Drive Option Kit	331346-B21
	HP ProLiant 48X CD w/SCREWS	337863-B21
	16X DVD-ROM Drive Option Kit (Carbon)	217053-B21
Base Hard Drives	**Non-Hot Plug U320 SCSI Drives** **NOTE:** For use in Non-Hot Plug SCSI base configurations P/N 381850-405 or 381805-B21.	
	HP 36GB U320 15K NHP HDD	357012-B21
	HP 72GB U320 10K NHP HDD	332751-B21
	Hot Plug U320 SCSI Drives **NOTE:** For use in Hot Plug SCSI base configurations P/N 378559-405 or 378559-B21.	
	HP 72GB U320 10K Universal HDD	286714-B22
	HP 146GB U320 10K Universal HDD	286716-B22
	HP 36GB U320 15K Universal HDD	286776-B22
	HP 72GB U320 15K Universal HDD	286778-B22

Configuration Information - Factory Integrated Models (North America only)

Non-Hot Plug SATA Drives
NOTE: For use in Non-Hot Plug SATA base configurations P/N 381851-405 or 381851-B21.

HP 80GB 1.5G SATA 7.2K NHP 3.5" HDD	383410-B21
HP 160GB 1.5G SATA 7.2K NHP 3.5" HDD, FIO	399164-B21
HP 250GB 1.5G SATA 7.2K NHP 3.5" HDD, FIO	399165-B21
HP 500GB 1.5G SATA 7.2K 3.5" HDD	395473-B21

Hot Plug SATA Drives
NOTE: For use in Hot Plug SATA/SAS base configurations P/N 378560-405 or 378560-B21.

HP 80GB 1.5G SATA 7.2K 3.5" HDD	349237-B21
HP 160GB 1.5G SATA 7.2K 3.5" HDD	349238-B21
HP 250GB 1.5G SATA 7.2K 3.5" HDD	349239-B21

Hot Plug SAS 3.5" Drives
NOTE: for use in Hot Plug SATA/SAS base configurations P/N 378560-405 or 378560-B21.

HP 36GB 3G SAS 15K 3.5" HDD	375868-B21
HP 72GB 3G SAS 15K 3.5" HDD	375870-B21
HP 146GB 3G SAS 15K 3.5" HDD	375872-B21

Step 3: Choose Additional Factory Integratable Options

Controllers	Smart Array 641 Controller	291966-B21
	Smart Array 642 Controller	291967-B21
	64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter	268351-B21
	64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2	374654-B21

Step 4: Choose Additional Options for Factory Integration

NOTE: For additional options, please refer to the "Options" section below.

Options

ProLiant Essentials Value Pack Software	**ProLiant Essentials Intelligent Networking Pack**	
	ProLiant Essentials Intelligent Networking Pack, Single Server License	372906-B21
	NOTE: For use with a single server. Contains one license with a unique license activation key and documentation.	
	NOTE: For additional ProLiant Intelligent Networking Pack License Kits please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12062_div/12062_div.HTML	
	ProLiant Essentials Performance Management Pack	
	ProLiant Essentials Performance Management Pack, Single-Server License	306696-B21
	NOTE: For use with a single server. Contains one license with a unique license activation key, HP Management CD and documentation.	
	NOTE: The most recent version of the software can always be downloaded at http://www.hp.com/products/pmp.	
	NOTE: For additional ProLiant Intelligent Networking Pack - Windows License Kits please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12062_div/12062_div.HTML	
	ProLiant Essentials Intelligent Networking Pack - Linux Edition, Single Server License	397004-B21
	NOTE: For additional ProLiant Intelligent Networking Pack - Linux License Kits please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12327_div/12327_div.HTML	
	ProLiant Essentials Rapid Deployment Pack Windows Edition and Linux Edition Release	
	Rapid Deployment Pack, Single-Server License	267196-B21
	NOTE: This license allows 1 server to be deployed and managed via RDP.	
	Rapid Deployment Pack, Single-Server License (Japan)	267196-291
	NOTE: This license allows 1 server to be deployed and managed via RDP.	
	NOTE: For additional ProLiant Essentials Rapid Deployment Pack License Kits please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/11053_div/11053_div.HTML http://h18000.www1.hp.com/products/quickspecs/11713_div/11713_div.HTML	
	ProLiant Essentials Virtualization Management Software	
	ProLiant Essentials Virtual Machine Management Pack, Single-Server License	372214-B21
	NOTE: For use with a single server. Contains one license with a unique license activation key and documentation.	
	ProLiant Essentials Server Migration Pack, Single-Migration License	375345-B21
	NOTE: Contains one license, enabling 1 server migration, with a unique license activation key and documentation.	
	NOTE: This license allows 1 server to be migrated from a physical server to a virtual machine. Or this license can be used to migrate a virtual machine from one virtualization layer i.e. VMware GSX to a different virtualization layer such as VMware ESX or Microsoft Virtual Server 2005.	
	NOTE: For additional ProLiant Essentials Virtualization Management Software License Kits please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12328_div/12328_div.HTML	
	ProLiant Essentials Vulnerability and Patch Management Pack	
	ProLiant Essentials Vulnerability and Patch Management Pack, Single-Server License	371645-B21
	NOTE: For use with a single server. Contains one license with a unique license activation key and documentation.	

Options

NOTE: For additional ProLiant Vulnerability and Patch Management Pack License Kits, please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12111_div/12111_div.HTML

NOTE: Flexible and volume quantity license kits are available for ProLiant Essentials Value Packs. Refer to http://www.hp.com/servers/proliantessentials or the various ProLiant Essentials Value Pack product QuickSpecs for more information.

NOTE: For more information regarding ProLiant Essentials Software, please see the following URL: http://www.hp.com/servers/proliantessentials.

Memory (SDRAM DIMMs)	1024 MB Advanced ECC PC3200 DDR SDRAM DIMM (1 x 1024 MB)	354563-B21
	512 MB Advanced ECC PC3200 DDR SDRAM DIMM (1 x 512 MB)	354560-B21
	256 MB Advanced ECC PC3200 DDR SDRAM DIMM (1 x 256 MB)	354557-B21
Optical Drives	16X DVD-ROM Drive Option Kit (Carbon)	217053-B21
	CD-RW/DVD-ROM Combo Drive Option Kit	331346-B21
	NOTE: The DVD-ROM drive is supported in the CD-ROM bay and in the removable media bay. If placed in the removable media bay, it requires the 2-Device IDE cable (PN 305381-B21).	
	HP DVD+R/RW 16X Half Height	383974-B21
Diskette Drives	1.44MB Floppy Drive Option Kit	379257-B21
Serial Port Kit	HP ProLiant 2nd Serial port option kit	390390-B21
Hard Drives	**Ultra320 - Universal Hot Plug** (SCSI Hot Plug Models Only)	
	HP 300GB U320 10K Universal HDD	350964-B22
	HP 146GB U320 10K Universal HDD	286716-B22
	HP 72GB U320 10K Universal HDD	286714-B22
	HP 146GB U320 15K Universal HDD	347708-B22
	HP 72GB U320 15K Universal HDD	286778-B22
	HP 36GB U320 15K Universal HDD	286776-B22
	Ultra320 - Non-Hot Plug (SCSI Non Hot Plug Models Only)	
	HP 146GB U320 10K NHP HDD	356990-B21
	HP 72GB U320 10K NHP HDD	332751-B21
	HP 36GB U320 15K NHP HDD	357012-B21
	NOTE: Please see the Wide Ultra320 Universal Hot Plug QuickSpecs for additional technical information on the hard drives Support details, please see the following: http://h18000.www1.hp.com/products/quickspecs/11531_div/11531_div.HTML (Worldwide) http://h18000.www1.hp.com/products/quickspecs/11531_na/11531_na.HTML (North America)	
	Serial-Attached SCSI (SAS) Hot Plug Hard Drive (SATA/SAS Hot Plug Models Only)	
	HP 146GB 3G SAS 15K 3.5" HDD	375872-B21
	HP 72GB 3G SAS 15K 3.5" HDD	375870-B21
	HP 36GB 3G SAS 15K 3.5" HDD	375868-B21

Options

Serial-ATA (SATA) Hot Plug Hard Drive (SATA/SAS Hot Plug Models Only)

HP 250GB 1.5G SATA 7.2K 3.5" HDD	349239-B21
HP 160GB 1.5G SATA 7.2K 3.5" HDD	349238-B21
HP 80GB 1.5G SATA 7.2K 3.5" HDD	349237-B21

Serial-ATA (SATA) Non Hot Plug Hard Drive (SATA Non Hot Plug Models Only)

HP 80GB 1.5G SATA 7.2K NHP 3.5" HDD	383410-B21

NOTE: Please see the Hard Drive QuickSpecs for Technical Specifications such as capacity, height, width, interface, transfer rate, seek time, physical configuration, and operating temperature:
http://h18000.www1.hp.com/products/quickspecs/11940_div/11940_div.HTML (Worldwide)
http://h18000.www1.hp.com/products/quickspecs/11940_na/11940_na.HTML (North America)

Hard Drive Cables

HP 4-port SATA/SAS cable (target fan cable)	389653-B21

NOTE: This cable is required when the HP 6-port SATA RAID controller is installed on hot plug SATA/SAS models of the ML310 G2. See the "Storage" section of these QuickSpecs for information on controllers and cables required to support SATA drive configurations.

HP 2-port SATA Cable	379093-B21

NOTE: This cable is required when the HP 6-port SATA RAID controller is installed on non-hot plug SATA/SAS models of the ML310 G2. See the "Storage" section of these QuickSpecs for information on controllers and cables required to support SATA drive configurations.

Storage Controllers

SCSI Controllers

NOTE: The following Storage Controllers are qualified for SCSI drives only. They do not support SATA or SAS Drives.

Smart Array 6402/128 Controller	273915-B21
Smart Array 6404/256 Controller	273914-B21
Smart Array 641 Controller	291966-B21
Smart Array 642 Controller	291967-B21
128MB Battery-Backed Cache Enabler	351580-B21

NOTE: This 128MB BBWC supports the Smart Array 641 Controller and Smart Array 642 Controller.

Ultra320 Expansion Module for SA-6402	273911-B21
64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter	268351-B21
64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2	374654-B21

NOTE: Please see the following Controller or SCSI Adapter QuickSpecs for Technical Specifications such as PCI Bus, PCI Peak Data Transfer Rate, SCSI Protocols supported, SCSI Peak Data Transfer Rate, Channels, SCSI Ports, Drives supported, Cache, RAID support, and additional information:
http://h18000.www1.hp.com/products/quickspecs/12067_div/12067_div.HTML (Smart Array 641)
http://h18000.www1.hp.com/products/quickspecs/12069_div/12069_div.HTML (Smart Array 642)
http://h18000.www1.hp.com/products/quickspecs/10429_div/10429_div.HTML (Dual Channel SCSI Adapter)
http://h18000.www1.hp.com/products/quickspecs/11943_div/11943_div.HTML (Single Channel SCSI HBA)

Options

<table>
<tr><td colspan="2">SAS Controllers</td></tr>
<tr><td>Smart Array P600 Controller
NOTE: Serial SCSI/ATA.</td><td>337972-B21</td></tr>
<tr><td>512MB DDR BBWC Upgrade</td><td>372538-B21</td></tr>
<tr><td colspan="2">NOTE: Please see the following Controller QuickSpecs for Technical Specifications such as PCI Bus, PCI Peak Data Transfer Rate, SCSI Protocols supported, SCSI Peak Data Transfer Rate, Channels, SCSI Ports, Drives supported, Cache, RAID support, and additional information: http://h18000.www1.hp.com/products/quickspecs/12247_div/12247_div.HTML (Smart Array P600 Controller)</td></tr>
<tr><td colspan="2">SAS HBA</td></tr>
<tr><td>HP 8 Internal Port SAS HBA with RAID</td><td>347786-B21</td></tr>
<tr><td colspan="2">NOTE: Please see the HBA QuickSpecs for additional information: http://h18000.www.1.hp.com/products/quickspecs/12332_div/12332_div.HTML</td></tr>
<tr><td colspan="2">SATA Controller</td></tr>
<tr><td>HP 6-port SATA RAID Controller
NOTE: See the "Storage" section of these QuickSpecs for information on controllers and cables required to support SATA drive configurations</td><td>372953-B21</td></tr>
</table>

<table>
<tr><td>Communications</td><td>HP NC150T PCI 4-port Gigabit 1000T Combo Switch Adapter</td><td>367132-B21</td></tr>
<tr><td></td><td>HP NC310F PCI-X 1000SX Gigabit Server Adapter</td><td>368169-B21</td></tr>
<tr><td></td><td>HP NC320T PCI Express 1000T Gigabit Server Adapter</td><td>367047-B21</td></tr>
<tr><td></td><td>HP NC1020 PCI 1000T Gigabit Server Adapter</td><td>353377-B21</td></tr>
<tr><td></td><td>HP NC7170 PCI-X Dual Port 1000T Gigabit Server Adapter</td><td>313881-B21</td></tr>
<tr><td></td><td>HP NC7771 PCI-X 1000T Gigabit Server Adapter</td><td>290563-B21</td></tr>
<tr><td></td><td colspan="2">NOTE: NC61XX, NC71XX, NC77XX, or NC1020 network adapter (NIC) can be used for redundancy with the embedded NC7761 NIC. When either the embedded NC7761 or the NC1020 is teamed with other HP NICs, Jumbo Frames and LSO features are automatically disabled.</td></tr>
</table>

<table>
<tr><td>Management Options</td><td>Remote Insight Lights-Out Edition II (NA, LA)</td><td>227251-001</td></tr>
<tr><td></td><td>Remote Insight Lights-Out Edition II (EMEA)</td><td>227251-021</td></tr>
<tr><td></td><td>Remote Insight Lights-Out Edition II (ROW)</td><td>227251-371</td></tr>
</table>

<table>
<tr><td>Tape Drives</td><td colspan="2">NOTE: For the complete listing of Tape Drive offerings for this server, please visit: http://www.hp.com/products1/storage/compatibility/tapebackup/ISS/index.html</td></tr>
<tr><td></td><td colspan="2">For recommended tape drive offerings for this ProLiant server see the following:</td></tr>
<tr><td></td><td colspan="2">USB Tape Drives</td></tr>
<tr><td></td><td>HP StorageWorks DAT 40 USB Internal Tape Drive (Carbonite)</td><td>DW022A</td></tr>
<tr><td></td><td>HP StorageWorks DAT 40 USB External Tape Drive (Carbonite)</td><td>DW023A</td></tr>
<tr><td></td><td>HP StorageWorks DAT 72 USB Internal Tape Drive (Carbonite)</td><td>DW026A</td></tr>
<tr><td></td><td>HP StorageWorks DAT 72 USB External Tape Drive (Carbonite)</td><td>DW027A</td></tr>
<tr><td></td><td colspan="2">Internal, External, and Rack-Mount Ultrium Tape Drives</td></tr>
<tr><td></td><td>HP StorageWorks Ultrium 232 Internal Tape Drive (Carbonite)</td><td>DW064A</td></tr>
<tr><td></td><td>HP StorageWorks Ultrium 232 External Tape Drive (Carbonite)</td><td>DW065B</td></tr>
<tr><td></td><td>HP StorageWorks Ultrium 448 Internal Tape Drive (Carbonite)</td><td>DW016A</td></tr>
<tr><td></td><td colspan="2">NOTE: Please see the HP StorageWorks Ultrium Tape Drive QuickSpecs for</td></tr>
</table>

Options

additional options such as controllers, media, and other related items:
http://h18006.www1.hp.com/products/quickspecs/11739_div/11739_div.html
(Worldwide)
http://h18006.www1.hp.com/products/quickspecs/11739_na/11739_na.html
(North America)
For an up-to-date listing of the latest O/S and software support details for HP
Ultrium tape drives, please visit: http://www.hp.com/go/connect.

Internal, External, and Rack-Mount DAT Drives	
HP StorageWorks DAT 72 SCSI Internal Tape Drive (Carbon)	Q1522B
HP StorageWorks DAT 72 SCSI External Tape Drive (Carbon)	Q1523B
HP StorageWorks 1U Rack-mount kit with one DAT 72 (Carbon)	A7443A

NOTE: Please see the DAT Tape Drive QuickSpecs for controllers, media, and
other options:
http://h18000.www1.hp.com/products/quickspecs/11883_div/11883_div.HTML
(Worldwide)
http://h18000.www1.hp.com/products/quickspecs/11883_na/11883_na.HTML
(North America)
http://h18006.www1.hp.com/products/quickspecs/12128_div/12128_div.html
(Worldwide)
http://h18006.www1.hp.com/products/quickspecs/12128_na/12128_na.html
(North America)
For an up-to-date listing of the latest O/S and software support details for HP
DAT drives, please visit: http://www.hp.com/go/connect.

Rack-Mount Tape Drive Enclosures	
HP StorageWorks 1U Rack-Mount Kit	A7445B

NOTE: The 1U Rack-mount Kit can support up to (2) half-height tape drives and
compatible with multiple Single-Ended and LVD SCSI tape drives including the
DAT 24, DAT 40, DAT 72, DLT VS80, DLT VS160, Ultrium 215, Ultrium 232 and
Ultrium 448 tape drives.

HP StorageWorks 1U USB Rack-Mount Kit	A8007A
1U USB Cable Option Kit	396114-B21

NOTE: Converts a 1U SCSI rack-mount kit to a USB interface to support the
USB tape drives.

NOTE: Please see the Rack-Mount Tape Drive Kits QuickSpecs for additional
information regarding these kits:
http://h18000.www1.hp.com/products/quickspecs/10854_div/10854_div.HTML
(Worldwide)
http://h18000.www1.hp.com/products/quickspecs/10854_na/10854_na.HTML
(North America)

Options

Tape Autoloaders	**DAT Autoloader**	
	HP StorageWorks DAT 72x6 Autoloader (Internal)	Q1566A
	HP StorageWorks DAT 72x6 Autoloader (External)	Q1567A

NOTE: Please see the DAT 72x6 Tape Autoloader QuickSpecs for additional options such as host bus adapters, controllers and media:
http://h18006.www1.hp.com/products/quickspecs/11905_div/11905_div.html (Worldwide)
http://h18006.www1.hp.com/products/quickspecs/11905_na/11905_na.html (North America)

HP StorageWorks 1/8 Tape Autoloader

HP StorageWorks 1/8 Ultrium 960 Tape Autoloader	AF204A
HP StorageWorks 1/8 Ultrium 448 Tape Autoloader	AF203A
HP StorageWorks 1/8 Ultrium 232 Tape Autoloader	AF202A
1/8 Tape Autoloader Rackmount Kit	C9268R

NOTE: Required to install the unit in a standard 19-inch rack; includes rails and rackmount instructions

NOTE: Please reference the 1/8 Tape Autoloader QuickSpecs at http://www.hp.com/go/automation for additional information needed to create a complete solution; reference current compatibility information at http://www.hp.com/go/ebs

Tape Libraries	**HP StorageWorks MSL2024 Tape Library**	
	HP StorageWorks MSL2024 1 Ultrium 960 Drive Library	AG115A
	HP StorageWorks MSL2024 1 Ultrium 448 Drive Library	AG116A
	HP StorageWorks MSL2024 2 Ultrium 448 Drive Library	AG117A
	HP StorageWorks MSL6000 Tape Library	
	Ultrium 960 technology	
	HP StorageWorks MSL6030 1 Ultrium 960 Dr LVDS Library	AD606A
	HP StorageWorks MSL6030 1 Ultrium 960 Dr FC Library	AD608A
	HP StorageWorks MSL6030 2 Ultrium 960 Dr LVDS Library	AD607A
	HP StorageWorks MSL6030 2 Ultrium 960 Dr FC Library	AD609A
	Ultrium 460 technology	
	HP StorageWorks MSL6030 1 Ultrium 460 Dr LVDS Library	AD598A
	HP StorageWorks MSL6030 1 Ultrium 460 Dr FC Library	AD600A
	HP StorageWorks MSL6030 2 Ultrium 460 Dr LVDS Library	AD599A
	HP StorageWorks MSL6030 2 Ultrium 460 Dr FC Library	AD601A

NOTE: Please reference the MSL2024 and MSL6000 Tape Library QuickSpecs at http://www.hp.com/go/automation for additional information needed to create a complete solution; reference current compatibility information at http://www.hp.com/go/ebs.

Options

Magneto-Optical Jukeboxes	**HP StorageWorks 9.1 GB Optical Jukeboxes**	
	600mx, 4 drive, 64 slot jukebox	C1160M
	1200mx, 4 drive, up to 128 slots	C1104M
	2200mx, 6 drive, up to 238 slots	C1107M
	NOTE: Please see the HP StorageWorks Magneto-Optical Products data sheet for a complete listing of available jukeboxes at: http://www.hp.com/products1/storage/products/archivalprod/brochures/ MO_family_pb.pdf **NOTE:** Please reference the Magneto-Optical Jukebox data sheets at http://www.hp.com/go/optical for additional information needed to create a complete solution.	

Ultra Density Optical Jukeboxes	1900ux, 4 drive, 64 slot jukebox	AA966A
	3800ux, 4 drive, 128 slot jukebox	AA969A
	7100ux, 6 drive, 238 slot jukebox	AA971A
	NOTE: Please see the HP StorageWorks Ultra Density Optical Jukeboxes QuickSpecs for a complete listing of available jukeboxes at: http://h18006.www1.hp.com/products/quickspecs/11944_div/11944_div.html **NOTE:** Please reference the Ultra Density Optical Jukebox QuickSpecs at http://www.hp.com/go/optical for additional information needed to create a complete solution	

HP StorageWorks Modular Smart Array 30	HP StorageWorks Modular Smart Array 30 SB	302969-B21
	NOTE: Rack-mountable 14 drive enclosure with single bus, redundant power supplies	
	HP StorageWorks Modular Smart Array 30 DB	302970-B21
	NOTE: Rack-mountable 14 drive enclosure with dual bus, redundant power supplies	
	NOTE: The Modular Smart Array Enclosure 30 Family supports the Wide Ultra3, Ultra320 Hot Plug Hard Drives.	

Uninterruptible Power Systems – Tower Supply	HP T500 UPS 120 V (US)	361475-001
	HP UPS Model T700 (700VA, 500 Watt), Low Voltage (NA)	204015-001
	HP UPS Model T700 (700VA, 500 Watt), High Voltage (Int'l)	204015-B31
	HP T750 UPS (NA, Japan)	378439-D71
	HP T750 UPS (Int'l)	378439-B31
	HP UPS Model T1000 XR (1000VA, 700 Watt), Low Voltage (NA)	204155-001
	HP UPS Model T1000 XR (1000VA, 700 Watt), High Voltage (Int'l)	204155-B31
	HP UPS T1000 XR (1000VA, 700Watts) 100 VAC (JPN)	312803-291
	HP UPS Model T1500 XR (1440VA, 1050 Watt), Low Voltage (NA)	204155-002
	HP UPS Model T1500 XR (1440VA, 1050 Watt), Low Voltage (Int'l)	204155-B32
	HP UPS Model T1500 XR (1500VA, 1050 Watt), Low Voltage (JPN)	204155-291

Options

Uninterruptible Power Systems – Rack	HP UPS R5500 XR, (5000VA, 4500 Watt), High Voltage (NA/Jpn)	326529-D71
	HP UPS R5500 XR, (6000VA, 5400 Watt), High Voltage (Int'l)	326529-B31
	HP UPS R1500 XR (100 to 127) (NA)	204404-001
	HP UPS R1500 XR (208 to 480) (Int'l)	204404-B31
	HP UPS R1500 XR (100 to 127) (Japan)	204404-291
	HP UPS R3000 XR (120V) (NA)	192186-001
	HP UPS R3000 XR (208V) (NA)	192186-002
	HP UPS R3000 XR (100V) (Japan)	192186-291
	HP UPS R3000 XR (208V) (Japan) Compaq UPS R3000 XR (200V) (Japan)	192186-292
	HP UPS R3000 XR (230V) (Int'l - detachable cord)	192186-B31
	HP UPS R3000 XR (230V) (16A IEC309 Plug)	192186-B32
	HP UPS R3000 XR (230V) (16A CEE 7/7 SCHUKO Plug)	192186-B33
	HP UPS R3000 XR (230V) (16A BS-546 Plug)	192186-AR1
	HP UPS R5500 XR, (5000VA, 4500 Watt), High Voltage (NA/Jpn)	326529-D71
	HP UPS R5500 XR, (6000VA, 5400 Watt), High Voltage (Int'l)	326529-B31
	UPS R12000 XR N+ x (200-240V) (WW-hardwired)	207552-B22
	NOTE: The UPS R12000 XR has a hardwired input and output connection.	

Modular PDUs 1U/0U (Up to 32 outlets) **NOTE:** 1U/0U mounting brackets shipped with the unit (optimized for 10000 and 9000 series racks).	HP Modular Power Distribution Units (mPDU), Low Volt Model, 24A (100-127 VAC) (NA, Japan)	252663-D71
	NOTE: This mPDU (252663-D71) may also be used to connect the low volt model of the UPS R3000 XR.	
	HP Modular Power Distribution Units (mPDU), High Volt Model, 24A (200-240 VAC) (NA, Japan)	252663-D72
	HP Modular Power Distribution Units (mPDU), High Volt Model, 32A (200-240 VAC) (Int'l)	252663-B31
	HP Modular Power Distribution Units (mPDU), High Volt Model, 40A (200-240 VAC) (WW)	252663-B21
	NOTE: This mPDU (252663-B21), 40A model has a hardwired input.	
	HP Modular Power Distribution Units (mPDU), High Volt Model, 16A (200-240 VAC) (WW)	252663-B24
	NOTE: This PDU has a detachable input power cord and allows for adaptability to country specific power requirements. This model may also be used with the high volt UPSs R3000 XR and R6000 For North America, need to order cable PN 340653-001.	
	NOTE: Please see the following Modular Power Distribution Unit (Zero-U/1U Modular PDUs) QuickSpecs for additional options including shorter jumper cables and country specific power cords: http://h18000.www1.hp.com/products/quickspecs/11041_na/11041_na.HTML (North America) http://h18000.www1.hp.com/products/quickspecs/11041_div/11041_div.HTML (Worldwide)	

Rack Enabling Kit	ProLiant ML310/ML330 G2 Rack Enabling Kit	238547-B22
	NOTE: Support for racks with round or square mounting holes (including all Compaq and HP Rack System /E and HP Systems), with an adjustment range of 24" – 36".	

Options

Other	Internal to External SCSI Cable Option Kit (HD68)	159547-B22
	Internal to External SCSI Cable Option Kit (VHDCI)	333370-B21
	Telco Rack Option Kit	251243-B21
	NOTE: Support for all 2-post Telco racks requires the use of the standard four post rack kit and an additional option kit from HP.	

USB Options	USB Optical Scroll Mouse (Carbonite)	DD441B
	USB 1.44-MB External Diskette Drive (Carbonite)	DC141B

HP Rack 5000 Series (Graphite Metallic)	HP 5642 Rack-Unassembled	358254-B21

Rack Options for Rack 5000 Series	Stabilizer Kit for 5642 Rack (Graphite Carbon)	374493-B21
	NOTE: The stabilizing kit is used to prevent rack from tipping over.	
	Baying Kit for 5642 Rack (Graphite Carbon)	374499-B21
	NOTE: The baying kit is used to join two or more HP 5642 racks.	

HP Rack 10000 G2 Series (Carbon/Graphite Metallic)	10642 G2 (42U) Rack Cabinet - Pallet	AF001A
	10642 G2 (42U) Rack Cabinet - Shock Pallet	AF002A
	10642 G2 (42U) Rack Cabinet - Crated	AF003A
	10642 G2 (42U) Rack Cabinet, with Extension - Shock Pallet	AF004A
	10642 G2 (42U) Rack Cabinet, without door - Shock Pallet	AF005A
	10642 G2 (42U) Rack Cabinet - with Extension, without door - Shock Pallet	AF006A
	10636 G2 (36U) Rack Cabinet - Pallet	AF011A
	10636 G2 (36U) Rack Cabinet - Shock Pallet	AF012A
	10636 G2 (36U) Rack Cabinet - Crated	AF013A
	10636 G2 (36U) Rack Cabinet , with Extension - Shock Pallet	AF014A
	10636 G2 (36U) Rack Cabinet, without door - Shock Pallet	AF015A
	10636 G2 (36U) Rack Cabinet, with Extension, without door - Shock Pallet	AF016A

NOTE: It is mandatory to use a shock pallet when shipping racks with equipment installed.

NOTE: Please see the Rack 10000 G2 QuickSpecs for Technical Specifications such as height, width, depth, weight, and color: http://h18000.www1.hp.com/products/quickspecs/12402_div/12402_div.HTML (Worldwide)

NOTE: For additional information regarding Rack Cabinets, please see the following URL: http://www.hp.com/go/rackandpower.

Options

Rack Options for Rack 10000 G2 Series	HP 10642 G2 Front Door ALL	AF009A
	HP 10636 G2 Front Door ALL	AF019A
	10642 G2 (42U) Side Panels (set of two) (Graphite Metallic)	AF054A
	10636 G2 (36U) Side Panels (set of two) (Graphite Metallic)	AF056A
	10636 G2 Rear Extension Kit	AF060A
	600mm G2 Stabilizer Option Kit (Graphite)	AF062A
	600mm G2, Heavy Duty Stabilizer Option Kit (Graphite)	AF064A
	800mm G2 Stabilizer Option Kit (Graphite)	AF066A
	800mm G2, Heavy Duty Stabilizer Option Kit (Graphite)	AF068A

NOTE: Supports 10000 G2 Series only.

	HP 10000 G2 Rack Grounding Kit	AF074A
	600W 10K G2 Rack Tie Down	AF076A

NOTE: For additional information regarding Rack Options, please see the following URL: http://www.hp.com/go/rackandpower.

HP Rack 10000 Series (Graphite Metallic)	HP Rack S10614 (14U) Rack Cabinet - Shock Pallet	292302-B22
	HP Rack 10842 (42U) Rack Cabinet - Pallet	257415-B21
	HP Rack 10842 (42U) Rack Cabinet - Shock Pallet	257415-B22
	HP Rack 10647 (47U) – Pallet	245160-B21
	HP Rack 10647 (47U) – Crated	245160-B23
	HP Rack 10642 (42U) – Pallet	245161-B21
	HP Rack 10642 (42U) – Shock Pallet	245161-B22
	HP Rack 10642 (42U) – Crated	245161-B23
	HP Rack 10636 (36U) – Pallet	245162-B21
	HP Rack 10636 (36U) – Shock Pallet	245162-B22
	HP Rack 10636 (36U) – Crated	245162-B23
	HP Rack 10622 (22U) – Pallet	245163-B21
	HP Rack 10622 (22U) – Shock Pallet	245163-B22
	HP Rack 10622 (22U) – Crated	245163-B23

NOTE: -B21 (pallet) used to ship empty racks shipped on a truck
-B22 (shock pallet) used to ship racks with equipment installed (by custom systems, VARs and Channels)
-B23 (crated) used for air shipments of empty racks

NOTE: Please see the Rack 10000 QuickSpecs for Technical Specifications such as height, width, depth, weight, and color:
http://h18000.www1.hp.com/products/quickspecs/10995_div/10995_div.HTML (Worldwide)
http://h18000.www1.hp.com/products/quickspecs/10995_na/10995_na.HTML (North America)

NOTE: For additional information regarding Rack Cabinets, please see the following URL:
http://h18000.www1.hp.com/products/servers/proliantstorage/racks/index.html.

Options

Rack Options for Rack 10000 Series	HP Rack Light Kit (Neon)	361589-B21
	HP Rack Plinth Kit (Carbon)	251960-B21
	42U Side Panel - Graphite Metallic	246099-B21
	36U Side Panel - Graphite Metallic	246102-B21
	47U Side Panel - Graphite Metallic	255486-B21
	TFT7210R Rack Mounted 17" Monitor	348373-B21
	NOTE: For a complete list of Monitors please view the following URL: http://www.hp.com/go/kvm.	
	TFT5600 Rack Keyboard Monitor	221546-xx1
	NOTE: For a complete list of Monitors please view the following URL: http://www.hp.com/go/kvm.	
	1U Rack Keyboard & Drawer (Carbon)	257054-xx1

Country Code Key (for TFT5600 Rack Keyboard Monitor (PN 221546-xx1 and for 1U Rack Keyboard & Drawer (PN 257054-xx1))

XX = 00	US	XX = 09	Norway
XX = 03	UK	XX = 10	Sweden/Finland
XX = 04	Germany	XX = 11	Switzerland
XX = 05	France	XX = 13	Portugal
XX = 06	Italy	XX = 18	Belgium
XX = 07	Spain	XX = 29	Japan
XX = 08	Denmark	XX = B3	International

NOTE: For additional information regarding Rack Cabinets, please see the following URL: http://h18000.www1.hp.com/products/servers/proliantstorage/rack-options/index.html.

HP KVM Switch Options	IP Console Switch Box (KVM/IP), 3 x 1 x 16	262586-B21
	IP Console Switch Box (KVM/IP), 1 x 1 x 16	262585-B21
	Server Console Switch (KVM), 0 x 1 x 8 port	336044-B21
	Server Console Switch (KVM), 0 x 2 x 16 port	336045-B21
	PS/2 Interface Adapter, 1 pack	262588-B21
	PS/2 Interface Adapter, 8 pack	262587-B21
	USB Interface Adapter, 1 pack	336047-B21
	Serial Interface adapter - 1 Pack with power supply	373035-B21
	NOTE: Cat5e cables are required to connect Interface Adapters to Console Switches. Cat5e cables can be found at the following URL: http://www.hp.com/go/kvm.	
	HP 1x 4 USB/PS2 KVM Switch, TT (NA/JPN)	371301-D71
	HP 1x 4 USB/PS2 KVM Switch, TT (AU/NZ)	371301-011
	HP 1x 4 USB/PS2 KVM Switch, TT (UK)	371301-031
	HP 1x 4 USB/PS2 KVM Switch, TT (EU)	371301-A21
	HP 1x 4 USB/PS2 KVM Switch, RM (ALL)	371302-B21
	HP PS2 KVM Cable with audio, 6', 2-pack	371730-B21
	HP USB KVM Cable with audio, 6', 2-pack	371729-B21
	NOTE: For additional information regarding KVM switches, Serial Console servers, rack mount monitors, keyboards and all related options please see the following URL: http://www.hp.com/go/kvm.	

Options

HP Serial Console Server Options	HP 16 Port Serial Console Server (worldwide)	AF101A
	HP 48 Port Serial Console Server (worldwide)	AF102A
	Serial Adapter, RJ45-DB9 DCE Female, 1 Pack	AF103A
	Serial Adapter, RJ45-DB9 DCE Female, 8 Pack	AF110A

NOTE: Cat5e cables are required to connect Serial Adapters to Serial Console Servers. Additional Serial Adapters and Cat5e cables can be found at the following URL: http://www.hp.com/go/kvm.

NOTE: For additional information regarding KVM switches, Serial Console servers, rack mount monitors, keyboards and all related options please see the following URL: http://www.hp.com/go/kvm.

Service and Support Offerings (HP Care Pack Services)	***Hardware Services On-site Service***	
	Next Business Day On-site Service, 5-Day x 9-Hour Coverage, 3 Years, Electronic	U4445E
	4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Years, Electronic	U4446E
	4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	U4447E
	6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Years, Electronic	U4448E
	Installation & Start-up Services	
	Hardware Installation, Electronic	U4456E
	Installation & Start-Up of a ProLiant server and Microsoft or Linux O/S per the Customer Description and/or Data Sheet. To be delivered on a scheduled basis 8am-5pm, M-F, excl. HP holidays, Electronic	U4457E
	Support Plus	
	Onsite HW support, 8am-9pm, M-F, 4hr response and Microsoft O/S SW Tech support offsite, onsite at HP's discretion, 8am-9pm, M-F 2hr response time excl. HP holidays, Electronic	U4458E
	Support Plus 24	
	Onsite HW support 24x7, 4hr response and Microsoft O/S SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time incl. HP holidays, Electronic	U4459E
	Onsite HW support 24x7, 4hr response and SuSE Linux SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time incl. HP holidays, Electronic	U6306E
	Onsite HW support 24x7, 4hr response and Red Hat ES Linux SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time incl. HP holidays, Electronic	U8328E

NOTE: For more information, customer/resellers can contact http://www.hp.com/services/carepack.

Memory

HP ProLiant ML310 G2 All Models
Standard Memory - Pentium 4 Models
512 MB PC3200 Unbuffered ECC DDR SDRAM installed (1 x 512 MB SDRAM DIMM)

Standard Memory Replaced with Optional Memory
Up to 4096 MB memory is available with the optional installation of PC3200 Unbuffered ECC DDR SDRAM DIMM Memory kits.

These systems support PC3200 DDR memory and come standard with a single PC3200
DIMM installed.

The system board provides four DIMM sockets:

- Socket 1 (blue connector), channel A
- Socket 2 (black connector), channel A
- Socket 3 (blue connector), channel B
- Socket 4 (black connector), channel B

DIMMs do not need to be installed in pairs although installation of pairs (an equal DIMM for each channel) provides the best performance. The BIOS will detect the DIMM population and set the system accordingly as follows:

- Single-channel mode - DIMMs installed for one channel only
- Dual-channel asymmetric mode - DIMMs installed for both channels but of unequal channel capacities.
- Dual-channel interleaved mode (recommended) - DIMMs installed for both channels and offering equal channel capacities, proving the highest performance.

These systems require DIMMs with the following parameters:

- Unbuffered
- 256 MB, 512 MB, and 1 GB memory technology
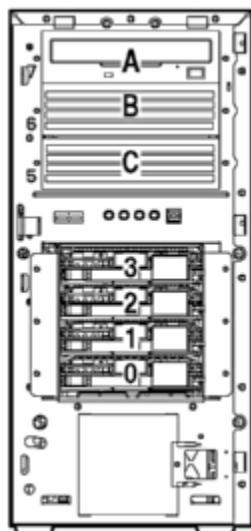- PC3200
- ECC DIMMs only

The first DIMM should be installed in Socket 1. A DIMM should not be installed in Socket 2 without a DIMM in Socket. Likewise a DIMM should not be installed in Socket 4 without a DIMM in Socket 3. A DIMM need not be installed in Socket 2 in order to install a DIMM in Socket 3.

The table below shows some of the suggested memory configurations for these systems.

NOTE: Table below does not list all possible configurations. Balanced-capacity, dual-channel loading yields best performance.

Channel A		Channel B		Total	Mode
Socket 1	Socket 2	Socket 3	Socket 4		
256 MB	none	none	none	256 MB	Single-channel
256 MB	none	256 MB	none	512 MB	Dual-channel interleaved
512 MB	none	none	none	512 MB	Single-channel
512 MB	none	512 MB	none	1 GB	Dual-channel interleaved
1 GB	none	none	none	1 GB	Single-channel
1 GB	none	1 GB	none	2 GB	Dual-channel interleaved
1 GB	1-GB	1 GB	none	3 GB	Dual-channel asymmetric
1 GB	1-GB	1 GB	1 GB	4 GB	Dual-channel interleaved

Storage

A,		48x IDE (ATAPI) CD-ROM
B, C		Removable Media Bays (1.6" each)
0, 1, 2, 3		Four Non-Hot Plug Drive Bays, or Four Hot Plug Drive Bays

Drive Support

	Quantity Supported	Position Supported	Controller
Removable Media			
1.44-MB Diskette Drive	Up to 1	A, B, or C	Integrated
IDE (ATAPI) CD-ROM Drive	Up to 2	A, B, or C	Integrated IDE (ATAPI)
DVD-ROM Drive Option Kit	Up to 2	A, B, or C	Integrated IDE (ATAPI)

Hard Drives

Ultra320 SCSI - Non-Hot Plug (Non-Hot Plug SCSI models only)

	Quantity Supported	Position Supported	Controller
36.4GB U320 15K	Up to 4	0,1, 2, or 3	Single Channel Ultra320 SCSI Adapter (SCSI Models)
72.8GB U320 15K			Smart Array 6402/128 Controller
146.8GB U320 15K			Smart Array 6404/256 Controller
			Smart Array 641 Controller
			Smart Array 642 Controller
			64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter

Ultra320 SCSI -Hot Plug (Hot Plug SCSI models only)

	Quantity Supported	Position Supported	Controller
300GB U320 10K	Up to 4	0,1, 2, or 3	Single Channel Ultra320 SCSI Adapter (SCSI Models)
146.8GB U320 10K			Smart Array 6404/256 Controller
72.8GB U320 10K			Smart Array 6404/256 Controller
146.8GB U320 15K			Smart Array 641 Controller
72.8GB U320 15K			Smart Array 642 Controller
36.4GB U320 15K			64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter

Storage

Hot Plug SAS - (Hot Plug SATA/SAS Models Only)

	Quantity Supported	Position Supported	Controller
36GB 3G SAS 15K 72GB 3G SAS 15K 146GB 3G SAS 15K	Up to 4	0, 1, 2, 3	Smart Array P600 Controller

NOTE: Use of SAS hard drives in SATA/SAS models requires installation of the Smart Array P600.

Hot Plug Serial ATA - (Hot Plug SATA/SAS Models Only)

	Quantity Supported	Position Supported	Controller
80GB 1.5G SATA 7.2K	Up to 4*	0, 1	Integrated four port SATA Controller with RAID 0/1
160GB 1.5G SATA 7.2K	Up to 2*	0, 1, 2, 3	Integrated four port SATA Controller with RAID 0/1
250GB 1.5G SATA 7.2K	Up to 4	0, 1, 2, 3	HP 6-port SATA RAID controller

*NOTE: A maximum of two hard drives are supported when integrated RAID is enabled. Use of hot plug SATA hard drives in positions 2 and/or 3 requires either a non-RAID configuration or installation of the HP 6-port SATA RAID controller (P/N 372953-B21) and the HP 4-port SATA/SAS target fan cable (P/N 389653-B21).
NOTE: Hot plug capability and drive LED status support requires installation of the HP 6-port SATA RAID controller.

Non-Hot Plug SATA - (Non-Hot Plug SATA models only)

	Quantity Supported	Position Supported	Controller
80GB 1.5G SATA 7.2K	Up to 2*	0, 1	Integrated four port SATA Controller
160GB 1.5G SATA 7.2K	Up to 4*	0, 1, 2, 3	Integrated four port SATA Controller with RAID 0/1
250GB 1.5G SATA 7.2K	Up to 4*	0, 1, 2, 3	HP 6-port SATA RAID controller

*NOTE: A maximum of two hard drives are supported when integrated RAID is enabled. Use of non-hot plug SATA hard drives in positions 2 and/or 3 requires either a non-RAID configuration or installation of the HP 6-port SATA RAID controller (P/N 372953-B21) and two of the HP 2-port SATA/SAS cables (P/N 379093-B21).
NOTE: Drive LED status support requires installation of the HP 6-port SATA RAID controller.

External Storage

	Quantity Supported	Position Supported	Host Controller or Adapter
Modular Smart Array 30 Family		External	Smart Array 642 Controller

Maximum Storage Capacity - SATA Models (SCSI Attached (Enclosure))

Internal	1.0TB (4 x 250GB)
External	29.40TB (14 x 300GB) x 7 (Requires additional SCSI controllers in slots)
Total	30.40TB

Maximum Storage Capacity - SCSI Models (SCSI Attached (Enclosure))

Internal	1.2TB (4 x 300GB hot-plug hard drives)
External	29.40TB (14 x 300GB) x 7
Total	30.60TB

Tape Drives, Tape Autoloaders & Tape Libraries

Storage

NOTE: For an up-to-date listing of the latest O/S Support details for each of the Tape Drives listed below, please see the following:
http://h18000.www1.hp.com/products/quickspecs/North_America/10233.html (North America)
http://h18000.www1.hp.com/products/quickspecs/Division/10233.html (Worldwide)

NOTE: For an up-to-date listing of the latest O/S Support details for each of the Tape Autoloaders and Tape Libraries listed below, please see the following:
http://h18000.www1.hp.com/products/quickspecs/North_America/10809.html (North America)
http://h18000.www1.hp.com/products/quickspecs/Division/10809.html (Worldwide)

NOTE: For complete listing of tape drive offerings see
http://www.hp.com/products1/storage/compatibility/tapebackup/ISS/index.html

	Quantity Supported	Position Supported	Controller
HP StorageWorks Tape Drives, USB Internal DAT 40 USB DAT 72 USB	1	B,C	Embedded USB port
HP StorageWorks Tape Drives, USB External DAT 24 USB DAT 40 USB DAT 72 USB	1 per USB port	External	USB port
HP StorageWorks Tape Drives, Internal Ultrium 232 Ultrium 448 Ultrium 460 Ultrium 960 DAT 40 DAT 72 DLT VS80 DLT VS160 SDLT 320 SDLT 600	1	B,C	64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter 64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2 64-Bit/66-MHz Dual Channel Wide Ultra3 SCSI Adapter, Alternate OS
HP StorageWorks Tape Drives, Internal Ultrium 232 Ultrium 448 Ultrium 460 Ultrium 960 DAT 40 DAT 72 DLT VS80 DLT VS160 SDLT 320 SDLT 600	1	B,C	64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter 64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2 64-Bit/66-MHz Dual Channel Wide Ultra3 SCSI Adapter, Alternate OS
HP StorageWorks Tape Drives, External Ultrium 960 SDLT 600	1 per SCSI Channel	External	64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter 64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2 64-Bit/66-MHz Dual Channel Wide Ultra3 SCSI Adapter, Alternate OS

Storage

HP StorageWorks Autoloaders, Internal DAT 72x6 Tape Autoloader	1	B,C	64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter 64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2 64-Bit/66-MHz Dual Channel Wide Ultra3 SCSI Adapter, Alternate OS
HP StorageWorks Autoloaders, External DAT 72x6 Tape Autoloader 1/8 Tape Autoloader	1 autoloader per SCSI channel	External	64-Bit/133MHz Dual Channel Ultra320 SCSI Adapter 64-Bit/133-MHz Single Channel Ultra320 SCSI HBA G2 64-Bit/66-MHz Dual Channel Wide Ultra3 SCSI Adapter, Alternate OS
HP StorageWorks Tape Libraries, External MSL2024 (Ultrium 960-based) MSL2024 (Ultrium 448-based) MSL6000 (Ultrium 960-based) MSL6000 (SDLT 600-based) MSL6000 (Ultrium 460-based) MSL5026S2 (SDLT 320-based) MSL5052S2 (SDLT 320-based)	Please reference the MSL Tape Library QuickSpecs to determine configuration requirements	External	Please consult the EBS connectivity matrix at http://www.hp.com/go/ebs for detailed connectivity information.

QuickSpecs

Technical Specifications

System Unit	Dimensions (HxWxD)	17.0 x 7-7/8 x 22 in (43.0 x 20.0 x 55.0 cm)	
	Weight (approximate)	37 lb (16.8 kg)	
	Input Requirements (per power supply)	Range Line Voltage	100-127V and 200-240V
		Normal Line Voltage	115 to 230 VAC
	Line Frequency	50 to 60 Hz	
	Rated Input Current	< 6A RMS at 90VAC with maximum load	
	BTU Rating	1,560 BTU	
	SCSI Connectors (SCSI Models only)	One internal HD68 connectors	
		NOTE: Support for either one internal or one external SCSI channel is available. This is achieved using an internal to external SCSI cable option kit (PN 159547-B22) and SCSI knockout bracket.	
	Power Supply Output Power	Rated Steady-State Power	350W
		Maximum Peak Power	370W
	Temperature Range	Operating	50° to 93° F (10° to 35° C)
		Shipping	-40° to 150° F (-40° to 66° C)
	Relative Humidity (non-condensing)	Operating	20% to 80%
		Non-operating	5% to 90%
	Acoustic Noise	Idle (Fixed Disk Drives Spinning)	
		L WAd (BELS)	5.7
		L pAm (dBA)	40
		Operating (Random Seeks to Fixed Disks)	
		L WAd (BELS)	5.7
		L pAm (dBA)	40

Non-Hot Plug Wide Ultra320 SCSI Hard Drives	**36.4 GB 15K** 357012-B21	**Capacity**	36419.2 MB	
		Height	1 in (2.54 cm)	
		Width	4 in (10.16 cm)	
		Interface	Ultra320 SCSI	
		Transfer Rate Synchronous (Maximum)	320 MB/s	
		Seek Time (typical reads, including settling)	Single Track	0.4 ms
			Average	3.8 ms
			Full-Stroke	8 ms
			Rotational	15,000 rpm
		Physical Configuration	Bytes/Sector	512
			Logical Blocks	71,132,000
		Operating Temperature	50° to 95° F (10° to 35° C)	

Technical Specifications

Non-Hot Plug SATA/100 80 GB 7.2K Hard Drives			
383410-B21	**Capacity**	80,000 MB	
	Height	1.028 in/2.611cm	
	Width	4.0 in/10.16 cm	
	Interface	Serial ATA	
	Transfer Rate Synchronous (Maximum)	1.5 Gb/s	
	Seek Time (typical reads, including settling)	Single Track	0.9 ms
		Average	9.0 ms
		Full-Stroke	17.0 ms
		Rotational	7,200 rpm
	Physical Configuration	Bytes/Sector	512
		Logical Blocks	156,301,488
	Operating Temperature	41° to 131° F (5° to 55° C)	

48X Max IDE (ATAPI) CD-ROM Drive			
	Disk	Applicable Disk	CD-ROM, CD-XA, CD-DA (Mode 1, Mode 2, Form 1 and 2)
			Photo CD (Single and Multi-session)
			Mixed Mode (Audio and Data combined)
			CD-R
		Capacity	540 MB (Mode 1, 12 cm)
			650 MB (Mode 2, 12 cm)
	Block Size	Mode 1	2,048 bytes
		Mode 2	2,340 bytes, 2,336 bytes
		CD-DA	2,352 bytes
		CD-XA	2,328 bytes
	Interface	IDE (ATAPI)	
	Access Times (typical)	Random	<100 ms
		Full-Stroke	<150 ms
	Data Transfer Rate	Sustained	3000 to 7200 KB/s (20X to 48X)
		Burst	150 KBps to 7,200 KBps
		Bus Rate	16.7 MBps
	Cache Buffer	128 KB	
	Start-up Time (typical)	< 7seconds	
	Stop Time	< 4seconds	
	Laser Parameters	Type	Semiconductor Laser GaA1As
		Wave Length	780 ± 25 nm
	Operating Conditions	Temperature	41° to 113° F (5° to 45° C)
		Humidity	10% to 80%
	Dimensions	(HxWxD, maximum)	1.7 x 5.85 x 8.11 in (4.29 x 14.86 x 20.60 cm)
		Weight	2.09 lb (0.95 kg)

QuickSpecs

Technical Specifications

Embedded NC7761 PCI 10/100/1000T Gigabit network adapter	Network Interface Compatibility	10Base-T/100Base-TX/1000Base-TX	
		IEEE 802.3 10Base-T	
		IEEE 802.3ab 1000Base-T	
		IEEE 802.3u 100Base-TX	
	Data Transfer Method	32-bit bus-master PCI	
	Network Transfer Rate	10Base-T(Half-Duplex)	10 Mb/s
		10Base-T(Full-Duplex)	20 Mb/s
		100Base-TX(Half-Duplex)	100 Mb/s
		100Base-TX(Full-Duplex)	200 Mb/s
		1000Base-TX (Half and Full-Duplex)	2000Mb/s
	Connector	RJ-45	
	Cable Support	10Base-T	Categories 3, 4 or 5 UTP; up to 328 ft (100 m)
		10/100/1000Base-TX	Category 5 UTP; up to 328 ft (100 m)

Integrated 4 Channel SATA Controller (SATA NHP Models only)	Drives Supported	Up to 4 SATA hard drives (1 drive/channel)
	Channels	4
	Storage Capacity	1 TB
	Maximum SATA Channel Transfer Rate	150 MB/s per channel
	SATA Protocols	SATA-1a
	Internal SATA Connectors	One 4-lane connector (all four channels)

Single Channel Ultra320 SCSI Adapter (SCSI Models only)	Drives Supported	Up to 15 SCSI devices Wide
	Data Transfer Method	64-bit/100-MHz PCI bus-master
	SCSI Channel Transfer Rate	320 MB/s per channel
	Maximum Transfer Rate per PCI Bus (peak)	1033 MB/s per channel
	SCSI Protocols	Ultra320, Wide Ultra3, Wide Ultra2, Wide Ultra SCSI-3, Fast-Wide SCSI-2, and Fast SCSI-2
		Fast SCSI-2
	Electrical Protocol	Low Voltage Differential (LVD)
	SCSI Termination	Active Termination
	External SCSI Connectors	None.
		NOTE: To implement an external SCSI connection, install an optional controller or internal to external SCSI option kit (part number 159547-B22 for HD68 or 333370-B21 for VHDCI).
	Internal SCSI Connectors	One 68-Pin Wide Ultra SCSI-3 connectors

Technical Specifications